Liverpool John Moores University

Title:	Engineering Mathematics B
Status:	Definitive
Code:	**4003AMCPD** (126477)
Version Start Date:	01-08-2019

Owning School/Faculty: Maritime and Mechanical Engineering
Teaching School/Faculty: Maritime and Mechanical Engineering

Team	Leader
Stewart Chidlow	Y

Academic Level:	FHEQ4	**Credit Value:**	10	**Total Delivered Hours:**	34
Total Learning Hours:	100	**Private Study:**	66		

Delivery Options
Course typically offered: Summer

Component	Contact Hours
Online	24
Tutorial	10

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Test	AS1	Weekly online coursework delivered using a virtual learning environment	100	

Aims

To provide a foundation in engineering mathematics for its application to the solution of engineering problems

Learning Outcomes

After completing the module the student should be able to:

1   Apply a knowledge of vectors and matrices to solve engineering problems.
2   Apply the techniques of differentiation and integration to solve engineering problems.
3   Solve first order ordinary differential equations by the method of separation of variables and apply to the modelling of engineering problems
4   Use and apply mathematical software to the solution of engineering mathematics problems

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Online Assessment   1   2   3   4

Outline Syllabus

Introduction of the use of a computer algebra system e.g. MATLAB (MuPAD). Use of the software applied to the syllabus items below

Basic vector algebra including Cartesian components and products. Differentiation of vectors. Applications.
Basic matrix manipulation including the inverse matrix. Solution of systems of linear equations.
Differential calculus of one variable: Gradient of curve, derivatives of standard functions, linearity, derivatives of composite functions, products and quotients. Applications. Stationary points. Rates of change.
Integral calculus as inverse of differentiation and as a limit of a sum. Standard integrals, linearity, integration of composite functions. Other methods of integration. Numerical integration.
Ordinary differential equations. First order linear, constant coefficient equations. Separation of variables. Application to modelling

Learning Activities

A combination of online lectures and tutorials

Notes

This is a single module CPD - programme code 36244
This module provides a foundation in engineering mathematics for level four students to enable them to apply this to the solution of engineering problems.

Coursework assessment will be through online questions delivered using MapleTA (or similar) online assessment software.

Candidates applying for the module must hold the prerequisite relevant engineering

qualifications at Level 3 totaling at least 90 credits. In addition, many will already have a HE level qualification and may use this CPD module to extend or update their existing skill set.

Intake entry point for study onto the CPD module will occur in summer.
The CPD module will not have any formal PSRB accreditation.
Subject benchmark statement - Aligns to Engineering Council UK SPEC
The module is a CPD version based on 4502MTC, which is part of the Advanced Manufacturing BEng.

TThe module will be delivered by remote study of on-line lecture content. Delivery of the module is intended to last approximately 12 weeks.

Learners are allocated a personal tutor, who may be drawn on to deal with any support requirements they may have. This support is delivered virtually using online virtual tutorial sessions.

Formative assessment will be facilitated through tutorial feedback, plus through engagement with online study material and assessment tasks.

The programme is assessed and run in line with the Academic Framework (https: //www.ljmu.ac.uk/about-us/public-information/academic-qualityandregulations/academic-framework).

The methods for improving the quality and standards of learning are as follows:
☐ Continuous Monitoring and Enhancement
☐ Liaison and feedback from the students
☐ Reports from the External Examiner
☐ Programme team ensuring the module reflects the values of the current teaching and learning strategy
☐ Module/Programme Leader updating knowledge and skills to ensure these remain current and relevant.

As the content of this CPD is derived from the Advanced Manufacturing BEng, it will share the same external examiner as that programme.